

Appl. No. 10/517,321
Amendment dated: July 6, 2006
Reply to OA of: February 6, 2006

Amendments to the drawings:

The attached sheets of drawings includes changes to Figures 12, 13, 14 and 15.

Attachment: Replacement Sheets

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REMARKS

Applicants have amended the specification, including the drawings and the claims to more particularly define the invention in view of the outstanding Official Action.

The specification has been amended to provide information on the trademark material as requested in the Official Action without introducing new matter to the application. The drawings have also been corrected as requested in the Official Action as has been the claims. Applicants most respectfully submit that all of the claims now present in the application are in full compliance with 35 USC 112 and are clearly patentable over the references of record.

The objection to claims 12 and 13 because of informalities: a comma following the word "for" in line 2, and the phrase "flow-through" should be inserted following the word "individual" in line 4 has been carefully considered but is most respectfully traversed in view of the amendments to these claims. Applicants have now amended claims 12 and 13 by placing a comma following the word "for" in line 2 and inserting the phrase "flow-through" following the word "individual" in line 4. Accordingly, it is most respectfully requested that this objection be withdrawn.

The rejection to claims 10-14 under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention is carefully considered but most respectfully traversed. It is most respectfully submitted that the Examiner has misunderstood what is said on line 6. The term "piezoelectric crystal microbalance" should not be read alone since it is a determination of the flow-through cell (10) i.e. the flow-through cell is one suitable for piezoelectric crystal microbalances. In paragraph 12 the Examiner finds the term "receptor connecting portion" in line 8 as vague and indefinite. Applicants have now inserted "the" before receptor connecting portion (112) on line 8 instead of the earlier "each receptor connecting portion". Applicants have now amended said phrase to "each cell connecting receptor" as suggested by the Examiner. Therefore, it is most respectfully requested that this rejection be withdrawn.

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The rejection to claims 10 and 11 under 35 USC 102 (b) as being anticipated by Yoshimine et al. (US PG Pub No. US 2004/0051595 A1, filed December 7, 2001) is has been carefully considered but most respectfully traversed.

Applicants wish to direct the Examiner's attention to MPEP § 2131 which states that to anticipate a claim, the reference must teach every element of the claim.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed.Cir. 1990).

In this regard, there appears to be some confusion in the citations made by the Examiner, for instance reference element 45 in Fig. 11 is a flow tube not an array of piezoelectric crystal microbalances, see paragraph [0083]. Further, the Examiner refers to the elements 14 and 18 in Fig. 7 and 8 respectively and Applicants cannot find any element 18 in Fig. 8. Clarification is requested if this rejection is maintained.

The citation of the current claim 10 shows that there is a misunderstanding. A pair of fluid connecting ports, 122, 124 of the current claim 10, is connected to the receptor connector portion (120) and is not a separate element without any connection to the connecting station as in Figure 6 of the cited US reference of Yoshimine et al. Therefore, we have recited the word comprises after "and" before the phrase "a pair of fluid connecting ports (122, 124)" in claim 10 to clearly show that the "wherein" refers to both the receptor connector portion (120) and a pair of fluid connecting ports (122, 124).

Thorough reading of the cited US application of Yoshimine et al. does not reveal how the liquid flows in a flow type liquid phase quartz oscillator sensor mounted in plurality on a substrate (Fig. 7). Only electrical connection to the corresponding portion of the substrate is disclosed [0051].

In paragraph [0070] is disclosed that a flow tube is preferably connected to either one or both of the inflow entrance 9 and the drain hole 10 in the flow-type liquid phase quartz oscillator sensor T. In Fig. 6 a flow-through cell is shown, but the inlet 9 and outlet 10 are not connected to the substrate. At the end of the US reference, in paragraph [0093], is disclosed that a sample solution was injected onto each oscillator indicating that the flows are separate from each other. The measuring cells are best seen in fig. 9 from which it is evident that the cells are stationary since they are formed of units of tube-like vessels 17. See paragraph [0073]. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection to claim 10 under 35 USC 102(b) as being anticipated by Kawakami et al. (US Patent 5,728,583) in light of Luscher et al. (US Patent 3,585,527) has been carefully considered but is most respectfully traversed. Kawakami et al discloses an apparatus comprising a plurality of measuring elements prepared by coating the surface of plate-shaped quartz oscillators with different protein layers and means for flowing a blood sample through the flow cell. Figure 9 shows how the flow cells may be interconnected. The cells are stationary since the areas defined by the plate-shaped quartz oscillators 50a-50c and the collar-like raised sections 21a-21c of the upper member 20 become the cell compartments - see column 6, lines 4 -7.

A distinguishing feature of the presently claimed invention in relation to the above discussed two main references against the current invention is that a whole piezo-electric flow-through cell is in one unit that is easily inserted into the connecting station of the multiple piezoelectric crystal microbalance device of the invention.

None of the cited references disclose or suggest a multiple piezoelectric crystal microbalance device which is adapted for receiving several complete, disposable or replaceable, flow-through cells (10), each containing a piezoelectric crystal (50) carrying two electrodes (56,62) in a cell compartment (34)

To clearly distinguish the present invention from the prior art Applicants have now inserted in claim 1 the feature from the specification, page 1, lines 31 and 32, i.e. the flow through cells are automatically operatively connected to the flowing unit and a power and measurement unit when they are plugged into the connecting stations.

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As is evident from the reading of the whole specification, the connecting station for receiving an array of individually operating piezoelectric crystal microbalances according to the invention is adapted for preferably disposable piezoelectric crystal microbalance flow-through cells, since the connecting panel comprises several receptor connector portion (120) for automatic mating operative engagement with a cell connector portion (24) of a piezoelectric crystal microbalance flow-through cell (10) upon plugging said flow-through cell (10) into the connecting station (100, 101). Therefore this feature has been inserted into claim 1. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 11-13 under 35 USC 103(a) as being unpatentable over Kawakami et al. (US Patent 5,728,583) in view of Takeuchi et al. (US Patent 6,326,563) has been carefully considered but is most respectfully traversed in view of the amendments to the claims as discussed above with respect to the anticipation rejection over these references.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

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Applicants also most respectfully direct the Examiner's attention to MPEP § 2144.08 (page 2100-114) wherein it is stated that Office personnel should consider all rebuttal argument and evidence presented by applicant and the citation of *In re Soni* for error in not considering evidence presented in the specification. For the reasons discussed above with respect to the anticipation rejections, there is insufficient motivation to combine the teachings and arrive at the presently claimed invention. Applicants' specification may not be used as a teaching reference. *In re Fritch*, 23 USPQ 1780, 1784 (Fed Cir. 1992) ("It is impermissible to engage in hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps.").

The rejection of claims 12 and 13 under 35 USC 103(a) as being unpatentable over Yoshimine et al. (US PG Pub No. Us 2004/0051595 A1, filed December 7, 2001) in view of Kawakami et al. (US Patent 5,728,583) has been carefully considered but is most respectfully traversed in view of the amendments to the claims and the above comments with respect to the relevancy of these references. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claim 14 under 35 USC 103(a) as being unpatentable over Yoshimine et al. (US PG Pub No. US 2004/0051595 A1, filed December 7, 2001) in view of Ricchio et al. (US Patent 5,130,095) is carefully considered but most respectfully traversed for the above reasons. It is urged that Ricchio et al teaches a flow cell having a solution grounding means on the inlet line for the sample adjacent to the entrance to the flow cell of fluid thereby minimizing electronic noise. However, this teaching does not overcome the teachings of the primary references for the above discussed reason. Therefore, it is most respectfully requested that this rejection be withdrawn.

The rejection of claim 14 under 35 USC 103(a) as being unpatentable over Kawakami et al. (US Patent 5,728,583) in view of Ricchio et al. (US Patent 5,130,095) is carefully considered but most respectfully traversed for the reasons discussed in the immediately preceding paragraphs. Accordingly, it is most respectfully requested that this rejection be withdrawn.

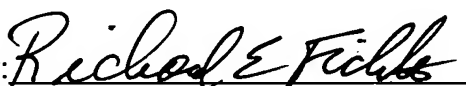
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The nonstatutory obviousness provisional double patenting rejections set forth on pages 13-17 have been carefully considered. It is noted that these are provisional rejections and therefore it is most respectfully requested that any requirement for filing a terminal disclaimer with respect to these applications be held in abeyance until there is an indication of allowable subject matter in one of the applications and then appropriate action will be taken therein. This is not an admission that there is an agreement with the obviousness type double patenting rejections but only a request for these to be held in abeyance in view of the provisional nature of these applications.

Applicants also wish to note the pending US Biosensor Patent applications are as follows: 10/517,322; 10/517,320; 10/495,115; PCT/SE2004/001697 – US application number not yet received; PCT/SE2004/000767 – US application number not yet received; Patent: 6,192,766

In view of the above comments and further amendments to the specification, drawings and claims, favorable reconsideration and allowance of all the claims now present in the application are most respectfully requested.

Respectfully submitted,
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